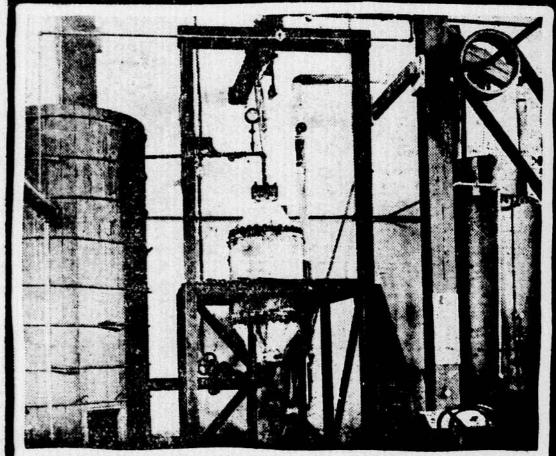
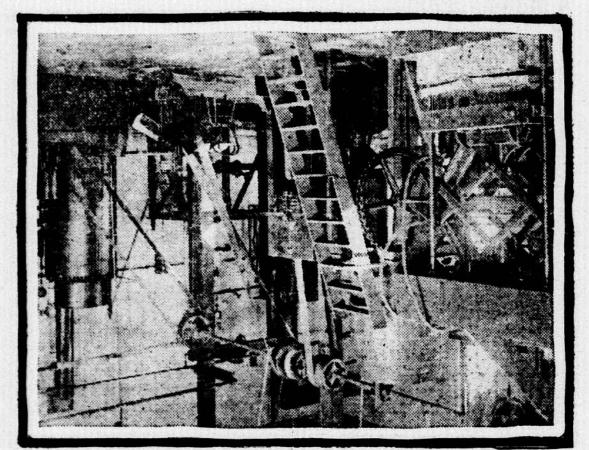
WASHINGTON'S REMARKABLE. WOOD-PULP MILL

MAY REVOLUTIONIZE PAPER MAKING INDUSTRY



Digester and Blow-Pit.



The Press and Chipper.

XPERTS Prove That Paper Can Be Manufactured From Cornstalks-Little Building Where Government Has Been Conducting Experiments That Will Revolutionize the Paper Business -Looked Upon by Forestry Officials as Solution of the Question of the Conservation of the Forests-Dr. Bristol and His Assistants Have Been Experimenting for Two Years-They Claim That the Paper Made From White Fir Pulp Is Superior to That Made From Spruce—Farmers Will Reap Great Financial Benefit From Sale of Waste Cornstalks.

avenue, where for more than a year and ually does the demand for this product factories it goes in a crude form to foreign countries. a half government experts have been la- increase that even the supply of these other establishments, where it is made employment of cornstalks, however, or, if boring on the manufacture of wood pulp. concluding are expected, it is said, to fear need be entertained. Billions of wood fiber, which is now a more familiar pensive. settle two great national questions-how stalks are yearly used as fodder, but be- sight than the one made of actual wood. to save the forests of the country from sides these, statistics of the forestry bu- In addition to pails, wood pulp is used. There is no more interesting department depletion and how to make commercial

products of the farm. be manufactured from ordinary corn-

claimed prove true. It will probably put time rolls away again. A cornstalk, howan end to the bitter war between the ever, matures in a single season. Indeed, newspaper publishers and the American in some sections of the corn belt there are pulp and paper manufacturers over the two annual supplies. annually increasing cost of paper; will do What this means to the farmer can be away with the necessity of the removal readily realized. Heretofore, with the of the present high tariff on imported exception of a very small portion which pulp and finally will open a new and al- he utilized in feeding his stock, thousands most boundless field of profit for the of stalks were left to rot on the fields. farmers. The discovery is due in a large Dr. Bristol's discovery is expected to conmeasure to the newspapers of the coun- vert this waste into a useful and market-

of the newspaper cannon and the roar of of pulp and the purchasers of that prod-near to sensitized instruments. the legal rapid fire guns which pro- uct in its various forms is, perhaps, dif- . It is probably used in the greatest quan-ISCOVERIES which are calcu- claimed the battle royal against the paper, ficult for the lay mind to grasp. making industry of the country started an investigation. He found, first, have recently been made by the more than the cost of paper had increased total of 3,600,000 cords of have recently been made by the that the cost of paper had increased total of 3,400,000 totals of pulp. This gate daily circulation of nearly a million more than \$60,000,000 within two years; used in the manufacture of pulp. This gate daily circulation of nearly a million and copies used 77,333,875 payings of white These discoveries have been made in a inevitably resulting in the total destructions, however dense, could long with- 211.873 pounds a day. small, unpretentious red brick building at tion of the once vast forests of spruce, stand such inroads.



Washing and Screening Machine.

woods from which commercial pulp could be manufactured. These facts led to the establishment of a government factory in this city, a factory perfect in detail and appointment, but not extensive. Dr. H. S. Bristol, chief of the section of wood chemistry, United States forestry service, was placed in charge and, aided by a score of government chemists, began the experiments which he is now bringing to so sucessful a conclusion.

However, it was only recently that he began his experiments with cornstalks. His first steps were guided by the theory that other woods could be employed with as good or better results than the rapidly disappearing species so exclusively used. This idea caused the paper manufacturers of the country to smile pityingly. They had tried other woods and they were sure that for the manufacture of

pulp, at least, they were useless. Nevertheless, samples of every kind of wood were obtained by the government position carefully studied and then they were put through the pulp making pro-The results proved that while each species demanded a particular treatment, one was quite as good as another pulp and paper can be made from white fir and scrub pine, of which there are pulp. During the past five years the millions of acres of vast, uncut tracts. Up to the present time these species of from 35 to 50 per cent per annum. The have been going to waste for lack of some commercial means of disposing of them. They have been but little used for lumber, and their proportion in the forests has therefore tended to increase. On the other hand, spruce, poplar and hemlock have yearly grown more scarce, a fact easily understood when one considers that last year alone the manufacture of pulp necessitated the stripping of an area half as large as the state of Rhode Island.

The Possibilities Discovered.

The substitution of white fir and scrub not better, for paper-making than any mable advantage of offering a new supply The far-reaching effects of this dis- fifteen years to mature, and, once cut forms.

price of imported pulp has increased over 40 per cent in a like period, for in all other parts of the world it has become yearly more difficult to obtain the necessary amount of the few species of woods which have been considered exclusively 4,000,000 Tons Last Year. And the failure of this supply would be a more serious affair than is at first realized. Nearly four million tons of pulp poplar remaining in the country, the fail-

substitutes must eventually be exhausted. into a number of different articles. Among waste there be, it need arouse no quaims. With the cornstalks, however, no such these articles is the water pail, made of The supply is as unlimited as it is inex-

demand and the diminishing supply, there

has been an enormous increase in the

cost of the articles made from wood

cost of paper has increased at the rate

covery are readily apparent if the results down, it cannot be replaced before that Americans now use wood pulp steam pulp-surgeon splints have many advan- Washington for future use. Simultaneously with the opening boom What it means to the manufacturers arise from the use of metallic substances

titles, however, in the newspapers through- ing made into pulp and paper.

were made last year, most of which was ure to produce a substitute for these used in the manufacture of paper for woods, together with a continuation of then fed into a machine which reduces this rate of consumption on the part of them to chips of a uniform size and thickpine for these woods is in itself enough magazines, books, and newspapers. But newspapers, would mean that within a ness. to insure against the destruction of the there are a multitude of other uses to very few years the country would be comforests for the time being, but so contin- which wood pulp is put. From the pulp pelled to obtain its supply of wood from termed "cooked." The rest of the sample

There need be no such waste in the moisture contained.

Conducting the Experiments.

reau show that there are more than in homes in the form of basins, dishes, of the government service than the little, enough annually going to waste to supply boxes and picture frames. Its use in one-story brick building in which Dr. The experts say they have proved, and twice the annual demand for pulp. It is the manufacture of car wheels has long Bristol and his assistants have made these are now demonstrating, that pulp, which a source which has not only been un- been known, but a new use reported from discoveries which will revolutionize the was heretofore made only from wood, can touched, but which can be employed at Germany is for telegraph poles. Articles pulp industry. In an iron shed just outbe manufactured from ordinary corn-stalks. Such pulp, too, can be made more a very low cost to the producer, with the cheaply and its quality is as good, if best results, and which has the inesti-

the material is barked-in regular facto- more time is required. ries this is done by machinery, but in this government establishment by hand-and is A weighed quantity is then taken to the digester to be what is technically

and steam, which thoroughly destroys the

"Cooking" the Pulp.

cementing material of the fibers and periment is made. When the time limit has expired and only the cellulose remable advantage of onering a new supply of conduits and insulators in various menting for better and cheaper results fitted with a perforated tile bottom they immediately remind one of the most with species that have hertofore been con- through which the waste liquor escapes. expensive stationery. sidered worthless. These samples, con- After being thus drained, the remaining Strange as it may seem, too, the paper sisting of about a thousand pounds of stock is weighed, the moisture contents made from the white fir is considerably and water pipes, shoe heels, horseshoes, each species, are being continually collect- of pulp determined, and the yield com- better than that made from the commerspools, tool handles, buttons, pulleys, pav- ed by the forestry assistants in the field puted. Then it is placed in a beating cial spruce, which has been heretofore the ing blocks and coffins. Paper-or wood and are shipped to the laboratory in machine, where all of the fibers that have uncontested favorite of paper manufac-

not as yet been separated are beaten turers the world over. Inside the building proper are the en- into a liquid mass. Thence it passes to white and lustrous, and sheets made from their lightness, strength and flexibility, gines, vats, digesters, strainers; in short, the big tank, where it is screened. All it, even without any beating, are remarkbut of all its uses, none is probably so everything that is necessary to the equip- of the extraneous matter is there strained ably tough and strong. In length, the unique as that for observatory domes, ment of a full-fledged paper mill, and be- out and only the pure wood pulp re- fibers are one-half to two-thirds as long Here again its lightness, strength and sides there are a great many things mains. There is hardly any chance of again as those of the spruce. flexibility commend it and in addition, it which would be considered unnecessary in anything else getting by, as the operation Continually the chemists are experienced to the distribution of the distributio has none of the disadvantages which a large plant that they use there for the consists of drawing the fibers through two menting and studying the characteristics furtherment of their experiments. Just brass plates fitted with slits .012 of an of each sample as carefully as does a at present the walls are lined with great inch in thickness. The suction of a rubber physician his patient. New methods are bundles of cornstalks which are daily be- diaphram which vacillates under the tried, but always with an eye to prac-

wood chemistry experts of the second, that the continually increasing is an increase of more than a million and copies, used 77,333,875 paunds of white against the revolving wheels of a grind- thickness or quality. The remaining five utilized for paper-making. Those intersecond, that the continually increasing is an increase of more than a limited against the revolving wheels of a grind- thickness or quality. The remaining five utilized for paper-making. Those interconsumption of timber was surely and a half cords in eight years, and no for- paper last year. This is an average of stone in a swift stream of water. This re- per cent is fit only for the making of a ested in the preservation of the forests duced the wood to the proper condition, very coarse grade of vrapping paper. see the dawn of a new era, and the public Since there is now only a comparatively but it also destroyed the fiber to such an With the cornstalks the operation is at large will receive the greatest benefit small, unpretentious red brick building at tion of the once vast forests of spruce, stand such into adds.

the southeastern end of Pennsylvania poplar and hemlock—supposedly the only And, corresponding with the increasing small acerage of spruce, hemlock and extent that this pulp was worthless by it- similar, but before it can be cooked the of all.

self to be used for paper. It had to be pith must be separated from the outer mixed with fiber that was long enough to covering. This is done by machinery. bind it together. In later years the Once separated, both may be used, the ground wood process gave way to the pith making a very strong wrapping newer and better soda and sulphite pro- paper, while the outer covering produces cesses that are now used. Still even to- a fine quality of pulp, very white in color day for reasons of economy there is a and with long strong fibers. Each regreat deal of the ground wood used, mixed quires only about one-third as much cookwith pulp obtained by the sulphite proc- ing as does the pulp made from wood. ess, in the cheaper papers. This is only Paper made from this pulp, too, yields used in the case of newspapers and wrap- readily to the bleaching process, and it ping papers, as most other papers have is said to be generally superior to that to be of a much better quality and made from any wood, with the exception of the formerly despised white fir. The Only the sulphite and the soda processes entire operation of converting cornstalks are used at this government factory, so into paper consumes a little less that when the laboratory is ready for a test twenty-four hours. When wood is used

Dr. H. S. Bristel, Chief of Bureau of Wood Chemistry.

The Made Paper.

The workers at the government labroratory press all their pulp into paper, scores of shelves being piled high with the results of their experiments. They press it into sheets of two sizes, the smaller about 8 by 10 inches, and the is examined for a determination of the larger 24 by 30 inches. Once pressed into sheets a microscopic examination of the fiber is made. The length and fine-The chips to be "cooked" are treated ness of the fibers are determined, and with a mixture of liquid sulphur dioxide numerous bleaching tests are carried out. Finally estimates are made of the amount

range from an almost pure white to a mains it is "blown" through the pipe be used as wrapping paper, while others which leads into the "blow pit." This is have such a fine, smooth texture that

plates causes the fibers to be drawn be- ticability and economy. The work that

. MRS. CLARENCE MACKAY, WIFE OF A MILLIONAIRE, WORKS FOR WOMAN'S SUFFRAGE.

WIFE of the Head of W the Mackay Family and Chief Heir of Its Millions Is One of the Grand Dames of American Life-Mrs. Mackay Is a Practical Philanthropist, Who Devotes Her Wealth and Her Talents to Upbuilding the National Schools-Her Ideal School and Its Obligations to the Present-Husband Admires and Supports Many of Her Radical

"It is some years ago," said Mrs. Mac- by the name of education." kay, "since I became convinced that the apathy which people, myself among the number, display toward the mysteries are to the off remarks of the interests of her charge, and she has created the most enlaw of the great pioneer, John W. Macanger and she has created the most enlaw of the great pioneer, John W. Macanger and she has created the most enlaw of the great pioneer, John W. Macanger and she has created the most enlaw of the great pioneer, John W. Macanger and she has created the most enlaw of the great pioneer, John W. Macanger and she has created the most enlaw of the great pioneer, John W. Macanger and she has created the most enlaw of the great pioneer, John W. Macanger and she has created the most enlaw of the great pioneer, John W. Macanger and she has created the most enlaw of the great pioneer, John W. Macanger and she has created the most enlaw of the great pioneer, John W. Macanger and she has created the most enlaw of the great pioneer, John W. Macanger and she has created the most enlaw of the great pioneer, John W. Macanger and she has created the most enlaw of the great pioneer, John W. Macanger and she has created the most enlaw of the great pioneer and pi number, display toward the mysteries swer to the oft-repeated old world criti- Her Children Attend Public School. of life was at the root of social, political cism, "But your women are butterflies, and economic evils. Take the school ques- mere milliners' models and brainless creaand economic evils. Take the school question, for instance. Hitherto we have accepted dumbly the dictum of our progenitors that schools were intended to teach the three R's. For the poor classes their three R's. For the poor classes their primal duty was to develop respectable primal duty w

of the future. I believe that book learning is but one part of the duty entailed in their responsibility.

Some School Ideals.

"The schools should first develop the best that is in a boy or girl, should what life really means to poor as to rich, force my way upon the school board in literary effort requires. BY MARGARET B. DOWNING. my home village. That is why I uphold Mrs. Mackay's first endeavor, and the HEN Mrs. Clarence Mackay, the principle involved in giving women a one which called attention to her personwife of one of Gotham's rich. vote in national affairs as well as in local ality, was the gift which restored the est men, a few weeks ago municipal ones. Their power for good is library founded by William Cullen Bryant publicly joined the ranks of unquestioned, and that there may be bad to usefulness. The pretty village of Rossuffragists and celebrated the woman voters is as old as the contention lyn, L. I., had neglected the gift of the event with great eclat, there were vari- that there are bad men who have the gentle poet and debts had piled upon it ous comments in the world of women, right to cast the ballot. I believe in the mountain high, Mrs. Mackay paid the These who favor the propaganda of Susan reawakening which comes from genuine debts, refurnished the building, with B. Anthony rejoiced at such a worthy patriotism, the patriotism of women-not money given or collected by herself, she convert. Those who relegate suffrage to to hold office and get an easy life berth, added generously to the collection of volthe category of fads and nonsense averred which is the inducement which public since that time, every dollar expended has that they thought Mrs. Mackay had bet- careers usually hold out for men-but to been wisely expended, and her impress on ter sense. But to examine the reasons make their country better; to raise the affairs in and around Hampstead is parawhich underlie Mrs. Mackay's action, to standard of manhood and womanhood mount even to that of active politicians. hear her side of the case, is to place the and to get going the reform in schools She was elected to the school board some question of woman's participation in na- which produces the education which educates, not the spurious article which goes since. She gives a good part of a working

the public schools were fulfilling their classes her activity in political affairs, and obligation in the present and in the realm especially in regard to the schools.

The Obligations of Wealth.

Mrs. Mackay acknowledges the obligation of vast wealth and exalted position, and, unlike her neighbors and associates in Gotham, she is too busy with the real issues of life to take a leading part in ture, the instinct of the fireside, the in- Vanity Fair. Once Mrs. Mackey horel stinct of mutual aid. That the occupa- to accomplish her ends by writing. She tions or pastimes of life should have a has two more than mediocre publications motive is one of the wonderful things to her credit, one a novel called the which we cannot dwell on too much. The "Stone of Destiny," and the other a school which arouses interest in life, in drama, "Gabrielle." But this method was is doing the finest work, and, according to done in her own generation. Writing, as my philosophy, women, the natural teach- she saw it, might mean a reform in the ers of the young are the best calculated to ages to come. Since she began her active arouse this needful interest. That is the work in the schools she has been too enprincipal reason which induced me to grossed to spend the necessary time which

day to considering the interests of her

To show how earnestly Mrs. Mackay ing masters or mistresses. Now, after devoting her life to the cause of pasary for the rich as well as the poor to it still more clearly exemplified, is the rarely beautiful woman and her charms trait of her character, that of fearless. Why, out our way some motor car of many months of meditation on the way triotism. It is under this name that she patronize them. If we draw such caste one to which I may send my daughters are the pride of her set. Her beautyis ness and absolute independence. Her other gets stuck in the mud every night.



clerks for employers or drudges for exact- turning her back on these things and system," said Mrs. Mackay, "it is neces- school ideal as I see it, and hope to see

lect finishing schools-impart." a serious view of life in the environment to a belle of eighteen. Nor has Mrs. lic parochials, is well remembered. Mrs. of 5th avenue and of Long Island is per- Mackay neglected the art of gowning her- Mackay declined to give even a small dohaps the most astonishing aspect of her self well. She has divided her day into nation, holding that all her interests and personality. For some years past she has infinitesimal parts in order to accomplish all her energies were bound up in the elected to keep Harbor Hill, the magnifi- all that she has planned, but a good por- public schools, with which she was afcent estate on Long Island, near Roslyn, tion goes to consulting with her maid and filiated. The storm of criticism to which as her permanent home, and the grand modiste. She is one of the women in public she was subjected moved her not one mansion in New York as a place to take life who recognizes the advantage of the inch from her position. Her friends came Harbor Hill stands pre-eminent in that She spends as much time in getting ready generously both Mr. and Mrs. Mackay region of glorious residences and estates, for a visit to her beloved schools as she had aided all Catholic causes in New and looms up from the long reach of would for the first opera night in Gotham. York and Long Island, and that it was Hampstead bay, as the most entrancing part of the view. Its neighbors are colonial mansions, French chales as Elizabethan residences and School at Poster. bethan residences and Swiss chalets, own-

ed by Morgans. Vanderbilts, Goulds, dren to school as well gowned, and this (Copyright, 1908, by Margaret B. Downing.) Whitneys and others whose names are also is part of Mrs. Mackay's propaganda. synonyms of wealth. The whole region seems destined to become the pleasure ground of rich New Yorkers. Already it ciles, vast park and garden areas, which compare favorably with "those ancient the dukerles of England.

Opposition and Indifference.

quarters here, and this alone would mark the spot as one fitted for frivolity and

with the full assurance that they will re- the type which wears well. Her figure is controversy with a Catholic parish priest ceive all and more than the so-called se- perfection, svelte and graceful. She has in Long Island, who criticised her benevo-That Mrs. Mackay has developed such of the envied clive kind would do credit tually demanded a contribution for Cathon occasional dip in the social waters, rich going among the poor well arrayed, cheerfully to her defense and showed how householder in Roslyn may send his chil- school at Roslyn.

Husband Shares Her Ideas.

is a district devoted to magnificent domiciles, vast park and garden areas, which Some speculation has progressed in gether approves his wife's growing in- success that he has had with opera. homes of lords and ladies built for pleas- clination toward public life. But those activity and that he really admires and It doesn't advertise. supports many of her radical measures. "I was waiting for the train in Nois The Meadow Brook Club has its social In the broadest sense this brilliant young Chucky one morning. One hour, two philosopher may claim to be a grande hours, three hours passed. The train was dame. She is the direct descendant of three hours late. I was indignant. idleness. Yet Mrs, Mackay has drawn that lovely Kitty Duer, daughter of Lord "After a while the ticket agent saunthe attention of her set to her activities Stirling, who turned the heads and cap- tered out of the office and lighted & and she has divided her environment into tured the hearts of whigs and tories dur- cigarette, two camps—those who approve and those halls at Harbor Hill with grand old be along soon?" who combat. "Even opposition is better family paintings by Gainsborough and "The agent looked down the track and than indifference," she said, in speaking Reynolds and Sir Peter Lely, of Lords yawned. of the hostile attitude of some of her and Ladies Stirling who have figured in neighbors. "Of course, those who think history. Through her mother, who was now. Here comes the conductor's dog." the daughter of William R. Travers, she differently discuss their views and that can claim kinship with the gentlest and leads to enlightenment on both sides of most distinguished of Virginia aristocthe question. Many times a woman sets racy. Her marriage with the enormously out very forciby against a proposition, rich son of John W. Mackay did not altobut when she has talked it over many gether meet the approval of some of her blue-blooded kinsfolk, but the marriage. times she begins to get new light on her though it is said to have been founded on dent," said a member of the Automobile prejudices and she changes very radically, ambition on both sides, has turned out Club of America. "Thomas, as usual, All I am aiming to do is to get rich and remarkably well. Through it Mr. Mackay railed against our bad roads.

dark eyes and hair and her complexion lence toward the public schools and vir-

It Ran Ahead.

"And yet at first," he said, "success ure and for state." as Tennyson describes who know best aver that Mr. Mackay came very slowly—as slowly as the trains finds no fault with any part of his wife's on that southern line-you know the one.

'Look here,' I said 'won't that train "'Ah, yes,' he said, 'she'll soon be here

Always Exciting.

VISITED E. R. Thomas and found him doing well after his motor acci-

Mrs. Mackay recently showed another "'Dull?' said the other. 'No, indeed.